5. Monitoring and Evaluation

This chapter describes how DNR will monitor and evaluate the implementation and effectiveness of this Lynx Habitat Management Plan. As part of implementation monitoring, DNR will report forest management activities, including timber sales, other silvicultural activities, road management and grazing program management, as well as management of human disturbances; conduct field checks; and re-assess the proportion of lynx habitat types across the landscape. Effectiveness monitoring will evaluate the suitability of the habitat being created under the guidelines, and the level of use by snowshoe hare.

DNR's Northeast Region will conduct the implementation monitoring. DNR's Land Management Division will coordinate the effectiveness monitoring of the plan, the biennial reporting to U.S. Fish and Wildlife Service and Washington Department of Fish and Wildlife, and the future plan evaluations.

The information gained from monitoring will play a key role in the periodic evaluation of the plan and any revisions that may be necessary.

5.1 Implementation Monitoring

The purpose of implementation monitoring is to ensure that guidance contained in the Lynx Habitat Management Plan is faithfully applied to DNR-managed lands within the lynx range. Summarized information from implementing the 1996 Lynx Plan and the 2002 "take avoidance letter" for the period November 1996 through April 2004 is presented in Appendix 1. Future implementation monitoring reports will be provided to USFWS and WDFW biennially. The reports will continue to include three major components: 1) a report of the forest management activities (i.e., timber harvests, silviculture activities, road construction and management; and grazing program); 2) field checks of a sample of management activities to verify reporting; and 3) updating of landscape-level (LAU) lynx habitat conditions.

DNR will provide USFWS and WDFW with a biennial report that describes the main categories of management activities, detailed below. The report will be delivered to the agencies no later than 90 days following the end of the fiscal year (June 30th). The next report will be delivered to USFWS and WDFW no later than September 30, 2006 and will address activities that occur between July 1, 2004 and June 30, 2006.

REPORTING OF FOREST MANAGEMENT ACTIVITIES

Timber Sales

The report will list the number, size, and location of all DNR timber sales sold within the lynx's range during the reporting period. For each sale, the report will describe the type of timber harvest that took place; describe the effects of timber harvest on forest structure and lynx habitat conditions; summarize applicable guidance contained in this plan which was applied to the sale design, associated road construction, and harvesting; describe any departures from guidance contained in this plan that may have been necessitated by local conditions; provide a detailed rationale for any such departures that occurred; and describe reforestation efforts.

Other Silvicultural Activities

The report will provide the same information (as for timber sales) for all other DNR silvicultural activities within the lynx range that influence forest structure and lynx habitat conditions.

Road Construction and Management

The report will list total miles of active and inactive roads on DNR-managed lands, miles of roads newly constructed, miles of roads reconstructed, miles of roads moved from active to inactive status, and miles of roads permanently retired during the reporting period. For each newly constructed road, the report will describe how guidance contained in this plan was applied to road planning and construction.

Human Disturbance Management

Changes to snowmobile use areas, monitoring observations, and employment of new strategies to discourage inappropriate use will be reported. Maps will be provided as necessary.

Grazing Program Management

The report will document annual monitoring of the permit ranges that occur within lynx range to document compliance with House Bill 1309 Ecosystem Standards for State-owned Agricultural and Grazing Land. Results will focus on annual utilization plot surveys, pasture rotations, range improvements, and adjustments made to the Coordinated Resource Management Plans during the reporting period. DNR staff is currently developing a process to collect and analyze field data on overall range conditions and trends using long-term nested frequency vegetation plots. The results will be reported in future implementation monitoring reports as budget and staff availability allows.

FIELD VERIFICATION OF THE LYNX PLAN IMPLEMENTATION AT STAND LEVEL

Each year DNR will field check a portion of its management activities within the lynx's range to verify application of guidance contained in this plan and assess post-harvest conditions. The portion of management activities checked will vary from year to year, depending on the size of the sales, program and resources available for monitoring; however, at least 20 percent of all timber sales or five timber sales, whichever number is smaller, will be sampled each year. Also, field checks will be carried out for all management activities involving a departure from guidance contained in this plan. Field checks will include the collection of data necessary to assess effects on lynx habitat

conditions. WDFW and USFWS are invited to participate in all field checks, and results of field checks will be included in the biennial report furnished to WDFW and USFWS.

REPORTING OF LANDSCAPE LEVEL HABITAT CONDITIONS

Each year, DNR will update its assessment of the proportions of major lynx habitat categories (i.e., Temporary non-lynx, Forage, Travel, Denning) within the North, Central, and South Loomis LAUs and the Little Pend Oreille Block. These assessments will address the effects of timber harvest and other management activities, fire and other natural causes of habitat loss, and habitat development as a result of both natural processes and silvicultural activities. Assessments will include the percent change by decade of Temporary Non-lynx areas and Travel habitat, according to DNR's "take avoidance" agreement. A description of the findings of the assessment and tables enumerating updated habitat proportions will be included in the biennial report furnished to USFWS and WDFW. For the 1996-2004 reporting period, this information can be found in Appendix 1, Section 4.

All GIS data layers on the distribution of different lynx habitat categories and snowmobile trails are stewarded by DNR's Land Management Division. They are available to all DNR staff as shared data and can be provided to USFWS and WDFW upon request.

5.2 Effectiveness Monitoring

The objective of effectiveness monitoring is to determine whether application of the guidance contained in the Lynx Habitat Management Plan results in anticipated habitat conditions. DNR does not have a commitment to monitor lynx on state lands. DNR has access to the WDFW database of lynx detections in Washington obtained by various agencies and individuals through snowtracking, radio-collaring or actual sighting of lynx and DNR may use these data during management planning. Effectiveness monitoring will consist of two major components: 1) sampling to verify the suitability of the designated forest stands as Forage and Denning habitat, and 2) sampling to assess snowshoe hare use of forest stands. Results of effectiveness monitoring conducted for the period 1997-2002 are presented in Appendix 2. In the future, results of effectiveness monitoring will be included with the biennial implementation report furnished to USFWS and WDFW. The first effectiveness monitoring report is due September 30, 2006, covering effectiveness monitoring activities from July 1 2004 through June 30, 2006.

EVALUATING FORAGE, TRAVEL AND DENNING HABITAT

Each year, samples of forest stands classified as Forage, Travel, and Denning habitat will be field checked to verify that forest structure required for forage, travel, or denning actually exists. Field checks will consist of repeated measurements of stand structure and relation of key structural variables of forage, travel and denning habitat definitions, such as trees per acre and horizontal cover. Initial emphasis will be placed on verifying the classification upon which the assessment of current conditions contained in this plan is based. Later, emphasis will shift to evaluating the effectiveness of the guidance contained in this plan to promote the development of new forage, travel, and denning habitat. Geographically, emphasis will be placed upon the three Loomis LAUs and the

Little Pend Oreille Block. The amount of habitat sampled each year will depend on available monitoring resources. However, an average of at least 200 acres (81 ha) of forage habitat/temporary non-lynx areas, 100 acres (40 ha) of travel habitat, and 100 acres (40 ha) of denning habitat will be sampled each year.

EVALUATING SNOWSHOE HARE USE

Snowshoe hare use of different forest types and successional stages will be monitored to evaluate hare-habitat relationships. This is necessary because the definition of forage habitat strongly influences forest management activities on DNR-managed lands pursuant to guidance contained in this plan. Particular emphasis will be placed on evaluating hare response to timber harvesting and silvicultural activities. Monitoring will entail correlating hare habitat use data derived from pellet count transects with data on vegetation and other key habitat variables. The amount of habitat sampled each year will depend on the sampling design that is developed following the guidance in the 1996 Lynx Plan (WDNR 1996a) and available monitoring resources. However, at least 6,565 feet (2000 m) of transects will be sampled each year.

COOPERATIVE RESEARCH

DNR will not undertake radio-telemetry studies of hare and lynx habitat use or studies of hare and lynx population dynamics as part of this plan. Such studies represent basic research into the ecology of lynx in Washington, and DNR believes such research is primarily the responsibility of WDFW, the Washington Cooperative Fish and Wildlife Research Unit, and universities. Additionally, such studies are very expensive and are best undertaken as joint ventures supported by several cooperators. Cooperation allows each organization's resources to be used most efficiently, reduces overall costs, and ensures that all interested parties base their management programs upon the same data. DNR is committed to participating in such cooperative research and will provide logistical and financial support for such efforts to the extent that it is able to do so amidst other budget priorities.

An example of one such effort is the 1998 cooperative study with Dr. John Weaver at the Wildlife Conservation Society on determining the population status of lynx within the Loomis and LPO Block using DNA analysis of lynx hair. DNR also participated in an interagency effort with the Wildlife Conservation Society, USFS, and USFWS to survey lynx using the same technique in northeastern Washington, which included portions of the Little Pend Oreille Block.

5.3 Evaluation

This Lynx Plan will be evaluated every five years, or more frequently by mutual agreement between DNR, USFWS and WDFW. The purpose of these evaluations is to reflect upon five years of monitoring data and experience in carrying out forest management activities pursuant to guidance contained in this plan, as well as to incorporate new information on lynx habitat relationships or forest biology that may have arisen. Any changes to this plan that may be prompted by these evaluations will be made by mutual agreement between DNR, USFWS and WDFW.

DNR's Land Management Division will coordinate the Lynx Plan evaluations. Northeast Region staff will provide monitoring data and data on the management activities as well as technical support to prepare the evaluations.

In order to plan and conduct effective evaluations it is essential that WDFW and USFWS provide DNR with timely information on changes in lynx conservation in Washington State. This information includes, but is not limited to, changes in the species conservation status; changes in LAU boundaries, known travel corridors, and known lynx den sites, etc.